

What is Claimed is:

1 1. A powder for forming a resorbable bone graft material for implant in a
2 bone defect, said powder comprising calcium sulfate hemihydrate mixable with a diluent
3 in a diluent to powder weight ratio from 0.19:1 to 0.31:1.

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5 2. A powder for forming an injectable resorbable bone graft material for
6 minimally invasive implant in a bone defect, said powder comprising calcium sulfate
7 hemihydrate mixable with a diluent in a diluent to powder weight ratio from 0.19:1 to
8 0.31:1 to form an injectable paste.

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5 3. An injectable resorbable bone graft material in the form of a paste for
minimally invasive implant in a bone defect comprising a powder formed of calcium
sulfate hemihydrate and a diluent mixed with said powder, said calcium sulfate
hemihydrate forming, by weight, from 99.8% to 100% of said powder, and said diluent to
powder weight ratio being from 0.19:1 to 0.31:1.

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5 4. The injectable resorbable bone graft material in the form of a paste for
minimally invasive implant in a bone defect recited in claim 3, further comprising an
accelerant wherein said accelerant includes calcium sulfate dihydrate and said
accelerant forming, by weight, from 0% to 0.2% of said powder.

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7 5. The injectable resorbable bone graft material of claim 4, wherein said
diluent includes sterile water.

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3 6. A method for treating bone defects comprising the steps of
mixing a powder comprising calcium sulfate hemihydrate with a diluent to
produce an injectable resorbable bone graft material in the form of a paste, the diluent

1 and the powder having a diluent to powder weight ratio of from 0.19:1 to 0.31:1; and
2 injecting the injectable resorbable bone graft material in the bone defect.

1 7. A method for treating bone defects comprising the steps of
2 mixing a powder comprising calcium sulfate hemihydrate with a diluent to
3 produce an injectable resorbable bone graft material in the form of a paste, the calcium
4 sulfate hemihydrate being formed of thick, stubby rod-like crystals; and
5 injecting the injectable resorbable bone graft material in the bone defect.

8. A bone graft material, comprising: calcium sulfate hemihydrate, the
calcium sulfate hemihydrate being formed of thick, stubby rod-like crystals.

1 9. A method for treating bone defects comprising the steps of
2 mixing a powder comprising calcium sulfate hemihydrate with a diluent to
3 produce an injectable resorbable bone graft material in the form of a paste; and
4 injecting the injectable resorbable bone graft material in the bone defect,
5 the injectable resorbable bone graft material having a compressive strength in excess of
6 15 MPa within one hour after said injecting step.

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8 10. The method of claim 9, wherein said bone graft material has a
9 compressive strength of approximately 45-49 MPa within one hour after said injecting
10 step.

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12 11. The method of claim 10, wherein said bone graft material has a
13 compressive strength exceeding approximately 50 MPa within one hour after said
14 injecting step.

1 12. A method for treating bone defects comprising the steps of
2 mixing a powder comprising calcium sulfate hemihydrate with a diluent to
3 produce an injected resorbable bone graft material in the form of a paste; and
4 injecting the injectable resorbable bone graft material in the bone defect,
5 said injectable resorbable bone graft material having a compressive strength of at least
6 6 MPa within 20 minutes after said injecting step.

1 13. A method for treating bone defects comprising the steps of
2 mixing a powder comprising calcium sulfate hemihydrate with a diluent to
3 produce an injected resorbable bone graft material in the form of a paste; and
4 injecting the injectable resorbable bone graft material in the bone defect,
5 said injectable resorbable bone graft material having a compressive strength of at least
6 35 MPa within 24 hours after said injecting step.

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8 14. The method of claim 13, wherein said bone graft material has a
9 compressive strength of approximately 56 MPa within 24 hours after said injecting step..

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11 15. A method for treating bone defects comprising the steps of
12 mixing a powder comprising calcium sulfate hemihydrate with a diluent to
13 produce an injected resorbable bone graft material in the form of a paste, wherein when
14 undergoing dry-testing, said bone graft material has a compressive strength of
15 approximately 88 MPa within 24 hours after said mixing step.

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17 16. The method of claim 15, wherein said bone graft material has a
18 compressive strength exceeding approximately 106 MPa within 24 hours after said
19 mixing step.